

CLAIMS

- 5 1. A retroviral vector particle comprising a packagable RNA genome capable of being inserted into a target cell genome when in the form of a DNA provirus, said RNA genome carrying sequences which provide in the DNA provirus at least one selected gene capable of being expressed in the target cell and located within an intron in a transcription unit of the provirus, which transcription unit further comprises a
- 10 polynucleotide response element responsive to a nucleus to cytoplasm transport factor.
2. The retroviral vector particle according to claim 1, wherein the polynucleotide response element is responsive to a transactivating
- 15 retroviral nucleus to cytoplasm transport factor.
3. The retroviral vector particle according to claim 2, wherein the polynucleotide response element is responsive to HIV Rev or a functional equivalent thereof.
- a 4. The retroviral vector particle according to ^{claim 1} ~~any one of claims 1~~ to 3, wherein the polynucleotide response element is the Rev response element (RRE) or a function equivalent thereof.
- a 20 5. The retroviral vector particle according to ^{claim 1} ~~any one of claims 1~~ to 4, wherein a selected gene is a therapeutic gene.
- a 6. The retroviral vector particle according to ^{claim 1} ~~any one of claims 1~~ to 5, based on an oncoretrovirus.
- a 25 7. The retroviral vector particle according to ^{claim 1} ~~any one of claims 1~~ to 6, based on murine leukemia virus (MLV).
- a 8. The retroviral vector particle according to ^{claim 1} ~~any one of claims 1~~ to 7, wherein the 5' long terminal repeat (LTR) of the provirus comprises
- 30 HIV U5 and R regions or functional portions thereof having Tat inducible

promoter activity, in place of the 5' LTR promoter function of the retrovirus on which the vector particle is based.

9. The retroviral vector particle according to ^{claim 1} ~~any one of claims 1 to 8~~, wherein the packaging signal is contained within the intron in which the selected gene is located.

10. A DNA construct encoding the packagable RNA genome for the retroviral vector particle according to ^{claim 1} ~~any one of claims 1 to 9~~, operably linked to a promoter.

11. The DNA construct according to claim 10, wherein the promoter is a strong promoter such as the CMV promoter.

12. The DNA construct according to claim 10 ~~or claim 11~~, wherein the selected gene is absent and the construct has an insertion site within the intron at which the selected gene or genes may be inserted.

13. A retroviral vector particle production system comprising a host cell transfected with the DNA construct according to ^{claim 10} ~~any one of claims 10 to 12~~, said system capable of producing retroviral vector particles according to any one of claims 1 to 8.

14. A retroviral vector particle production system comprising a set of nucleic acid sequences encoding the components of a retroviral vector particle according to ^{claim 1} ~~any one of claims 1 to 9~~.

15. The use of a retroviral vector according to ^{claim 1} ~~any one of claims 1 to 9~~ for gene therapy for infection or transduction of a target cell.

16. Target cells resulting from the method according to claim 15.

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